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United Nations

Report of the Board of Auditors

for the year ended 31 December 2010

Volume V
Capital master plan

General Assembly
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Sixty-sixth Session
Supplement No. 5

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Capital master plan

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Note

Symbols of United Nations documents are composed of capital letters combined with figures. Mention of such a symbol indicates a reference to a United Nations document.

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Letter of transmittal

[12 July 2011]

I have the honour to transmit to you the report of the Board of Auditors on the capital master plan for the year ended 31 December 2010.

(*Signed*) **Liu** Jiayi
Auditor-General of China
Chairman, United Nations Board of Auditors

The President of the General Assembly
of the United Nations
New York

Report of the Board of Auditors on the capital master plan for the year ended 31 December 2010

Summary

The $2 billion refurbishment of the United Nations Headquarters in New York, the capital master plan, is a complex, high-value and high-profile refurbishment project involving the modernization, securing and architectural preservation of an iconic 1950s campus-style development. There are governance and stakeholder management challenges involved in the project and at all times vital United Nations operations must be sustained, many of which must remain within the campus during construction.

In its resolution 57/292, the General Assembly stressed the importance of oversight of the development and implementation of the capital master plan, and requested the Board of Auditors to produce an annual report on the project. The present report contains the findings and recommendations of the Board's annual review of progress of the capital master plan in compliance with the Assembly's request.

Overall conclusion of the Board

The Board recognizes that there have been important areas of progress regarding the capital master plan. More than 6,000 staff have been moved from their previous locations into temporary offices and important elements of the construction work went broadly as planned. The Board has also seen evidence of areas of good practice within the capital master plan, for example, in the integrated team working between the Office of the Capital Master Plan, its professional advisers and the main contractor.

Budget and timetable risks

Despite these examples of progress, major challenges lie ahead for the capital master plan. The project, as at 31 March 2011, is forecasting a $79 million (4 per cent) overexpenditure against budget and vital parts of the project are now behind schedule. The Board notes that this cost forecast does not include a provision for the most likely costs of identified risks and a robust and auditable estimate of the cost of all change orders until project completion, nor does the forecast reflect all projected swing space rental costs. The Board is therefore of the view that this situation is more likely to worsen than improve, but that further overexpenditure and delay can be minimized if the Administration is able to take quick and firm action to fully address the concerns raised in the present report.

The project is facing the following considerable cost and time pressures:

- It is increasingly clear that the "associated costs" (which are related to the project, but not in the core scope or budget) cannot be absorbed by the project, as the General Assembly had previously requested, unless there is a significant reduction in scope
- The approach taken to estimating future costs, such as the most likely cost of identified risks or future change orders, is not sufficiently analytical. This gives

rise to uncertainty as to whether the remaining contingency allowance is sufficient to see the project through to completion, or whether the current reported overrun will increase further

- While the first migrations of staff back into the Secretariat Building on current plans are projected to begin three months after the completion projection published in September 2007 (accelerated strategy), the project has a history of time slippages. Past forecasts have tended to be optimistic and the schedule for the Conference and General Assembly Buildings has slipped considerably from earlier estimates, for reasons discussed below

- There remains no viable design solution for security requirements relating to the Dag Hammarskjöld Library and South Annex Buildings, and these elements of the project are currently on hold.

As the project approaches completion, some risks will pass and the probability of unexpected cost increases will diminish. However, the capacity of the capital master plan to absorb further time or cost pressure is now limited and the Board concludes that at the time of submission of the present report, there are significant additional risks of further cost increases and delays.

Benefit and efficiency opportunities

The Administration is working to realize the wider opportunities for improved communications and team-working presented by the capital master plan through co-locating senior management in the Secretariat Building and adopting open-plan rather than cellular office space. The Board is concerned, however, that the Administration does not have a structured process for defining the desired benefits to be achieved from the project, or for maximizing them; nor is it taking full advantage of the potential for improved office solutions, such as flexible desk-use policies which could offer a major cost-saving opportunity by allowing more staff to be housed in the Secretariat, thus reducing ongoing rental cost liabilities and potential cost overruns. Such benefits remain achievable, but the Administration would need to adopt a rigorous, highly supportive, change management approach to handle the inevitable cultural changes necessary in staff working practices.

Overall, the Board concludes that despite the progress within the capital master plan, the project is entering a critical phase where the flexibility to manage unexpected problems and pressures on cost and time is greatly reduced. It is now clear the project will be delivered late. The first migrations of staff back into the Secretariat Building will begin three months after the completion projection issued by the Office of the Capital Master Plan in September 2007 (accelerated strategy). The General Assembly and Conference Buildings are now projected to be delayed by a year, and there is the potential for scope reductions to the planned work on the Library and South Annex Buildings. The current cost forecast is $79 million (4 per cent) overbudget and there are significant risks that, if not firmly mitigated, could further increase delays and increase costs beyond the overexpenditure which is currently forecast. The Administration will have to act decisively if it is to realize the full benefits and opportunities presented by this once in a generation refurbishment.

Main findings and recommendations

The project completion date has slipped from mid-2013 to mid-2014 and the cost forecast is some 4 per cent over the current revised budget approved by the General Assembly, taking account of commitments for donations and the funds for security enhancements. The Office of the Capital Master Plan is reporting the forecast final cost for the whole project as $2,061 million, some $79 million over budget, and the completion of the General Assembly Building in mid-2014 will be a year later than the date set out in the revised accelerated schedule owing mainly to the security-related scope changes. Significant pressures have had and continue to have an impact on the cost, schedule and the scope of the project, including new security requirements necessitating some $100 million of protective work, supported by host nation funding.

The overall cost forecast does not explicitly allow for the cost of change orders, or make provision for the most likely costs of the risks in the risk register. Accurate and transparent cost forecasting on a project such as this is vital if management and those charged with governance are to act quickly and effectively to maintain full budgetary control. At the time of submission of the present report, the cost forecast does not include a robustly calculated and auditable estimate for the cost of all change orders until project completion and there is no provision for the most likely costs of identified risks. The full cost for renting temporary swing space also needs to be assessed and reflected in the cost forecast. As a result, the Board cannot provide assurance on the accuracy of the forecast costs to complete the project.

The lack of a workable design solution in the Dag Hammarskjöld Library and South Annex Buildings has put these elements of the project on hold. Following an assessment of the resilience of the buildings to explosive impact, the Office of the Capital Master Plan has put the design on hold pending further discussions with authorities of New York City and adjacent property owners whose plans may have a bearing on the solution. The Board was informed by the Office that the latest forecast cost for renovating the Library and the South Annex Buildings, as originally intended, is $65 million. The agreed budgets for the capital master plan do not separately identify the costs for these buildings.

The Office of the Capital Master Plan has no capacity to absorb the associated costs (some $146 million) within its budget. The associated costs are made necessary by the project, but are not within the project's direct scope of responsibility, nor were they included in the original budget for the capital master plan. Although the General Assembly had requested that the capital master plan absorb these costs, the Board concludes that this is no longer a realistic request without reductions in the scope of the plan or an increase in the cost overrun already reported by the project.

The capital master plan lacks effective control over the volume of changes to the project and continues to experience a large number of changes driven by the end occupiers and incomplete designs. Changes are a common feature of all construction projects, but can lead to risks of delay and increased costs. Effective change control is therefore a well-recognized success factor, where typically the eventual occupants or users are adequately consulted early in the design phase and the change process, after the design is finalized, is characterized by clear rules, strong governance and robust management to minimize changes. The designs for some phases of the capital master plan were not completed at the time of initial contract bidding and, in order to protect the project schedule, contracts are knowingly awarded on the basis of incomplete designs. In such circumstances it is

even more essential that effective procedures are in place to minimize and control changes, and to forecast the likely costs of future changes and process change orders efficiently. The Office of the Capital Master Plan has a robust process in place to handle change orders once they have arisen, but the Administration has not established an effective system to minimize the volume of changes from the outset and the continuing rate of changes and the increasing time it is taking to resolve changes, if not tackled now, will lead to further cost increases and delays.

The handover process from the Office of the Capital Master Plan to the Facilities Management Service is a critical risk area. Drawing on the lessons from the handover of the North Lawn Building, which was not a smooth process, the Facilities Management Service is recruiting more staff to work with the capital master plan, providing additional training to its operational staff and engaging a consultant to support the handover process. Despite such positive actions, the Board regards the readiness of the Service as a high-risk area because any delays at the handover stage in the project will inevitably increase costs.

In light of the foregoing findings the Board makes detailed recommendations in the main body of the present report. The Administration accepted all of the Board's recommendations with one exception: the recommendation that greater certainty is established on the funding for associated costs. The Administration considers that the General Assembly, in its resolution 65/269, makes it clear that the costs are absorbed into the budget of the capital master plan. The comments of both the Administration and the Board on this issue are reflected in paragraphs 80 to 82.

In summary, the main recommendations are that:

- **The Office of the Capital Master Plan strengthen its approach to forecasting future costs by including a robustly calculated and auditable estimate for the cost of all change orders until project completion and by allowing for the most likely costs of identified risks**
- **The Administration review the situation regarding the Library and South Annex Buildings, and decide a way forward**
- **The Administration and those responsible for governance rapidly resolve the untenable situation arising from the associated costs**
- **The Administration establish effective change control governance to minimize occupier-driven changes**
- **The Administration monitor, on a quarterly basis, the commissioning arrangements between the Facilities Management Service and the Office of the Capital Master Plan.**

Implementation of previous recommendations

Of the 20 recommendations the Board made in its report for the year ended 31 December 2009 (A/65/5 (Vol. V)), 9 (45 per cent) were fully implemented, 5 (25 per cent) were under implementation, 5 (25 per cent) were not implemented, of which 3 have now been superseded by new recommendations, and 1 (5 per cent) has been overtaken by events. The Board reiterates the recommendations from its previous report that have not been superseded or overtaken by events, but have not yet been fully implemented.

A. Mandate, scope and methodology

1. The capital master plan is the refurbishment of the United Nations Headquarters campus complex in New York. It was established pursuant to General Assembly resolution 55/238 and initially funded through an appropriation from the United Nations regular budget. The Assembly then established a special account for the capital master plan in section II, para. 24, of its resolution 57/292. Subsequently, appropriations were made to the special account from assessments on Member States. The financial position of the capital master plan is reported as part of statement IX, United Nations capital assets and construction in progress, of the financial statements of the United Nations (see A/66/5 (Vol. I)). Any unexpended balances of appropriations are carried forward into the succeeding biennium until the project is completed.

2. The General Assembly, in its resolution 57/292, stressed the importance of oversight of the development and implementation of the capital master plan, and requested the Board of Auditors to submit an annual report to the Assembly on the project.

3. In drafting the present report, the Board of Auditors examined the progress of the capital master plan since the preparation of its previous report (A/65/5 (Vol. V)) and the way in which risks associated with the project have been determined and are being managed. The primary objectives of the Board's examination were:

- To assess progress in implementing the Board's previous recommendations
- To assess progress within the capital master plan since the Board's previous annual report
- To assess whether the capital master plan is likely to be delivered within budget and within its intended schedule
- To make new recommendations aimed at further strengthening the management of the capital master plan.

4. The Board has worked closely with the Office of Internal Oversight Services to understand the results of recent internal audits, coordinate its respective audit work and minimize the demands placed upon the Office of the Capital Master Plan.

5. The present report addresses matters which, in the view of the Board, should be brought to the attention of the General Assembly. The Board's observations and conclusions were discussed with the Administration, whose views have been appropriately reflected in the report.

B. Findings and recommendations

1. Follow-up of previous recommendations of the Board of Auditors

6. Of the 20 recommendations the Board of Auditors made in its report for the year ended 31 December 2009 (A/65/5 (Vol. V)), 9 (45 per cent) were fully implemented, 5 (25 per cent) were under implementation and 5 (25 per cent) were not implemented. The five that have not been implemented relate to the following matters:

- Thirteen areas around the campus had been sponsored by Member States prior to the capital master plan and it was not clear whether they would remain as sponsors of those areas after the refurbishment. The Board previously recommended refining the policy regarding the handling and restoration of those sponsorships during and after the capital master plan project to provide clarity on this issue. The Board reiterates its previous recommendation
- The Board noted that the recommendation to establish a post-contract-award review process has been implemented, but that the process is not working as intended. The Board covers this point again in section B.10 of the present report
- The remaining three recommendations relate to cost forecasting and contingency setting, and have now been superseded by new recommendations in this present report.

7. The Board reiterates the recommendations from its previous report that have not been superseded but have not yet been fully implemented (see A/65/5 (Vol. V), paras. 31, 62, 67, 112, 118, 129 and 147). It also considers that one (5 per cent) of the recommendations from that report has now been overtaken by events. It concerns delays in the contract negotiations for the Conference Building. Changes to the Conference Building plans to include new security requirements mean that this recommendation has been overtaken by events.

2. Background and financial position

8. The need for a total refurbishment of the United Nations Headquarters in New York was identified during the late 1990s. In June 2000 the Secretary-General's report on the capital master plan (A/55/117) clearly articulated the need for refurbishment and presented a range of potential approaches. The preferred option was a six-year refurbishment costing some $964 million and involving construction activity of up to 30 per cent of the campus at any one time.

9. From 2000 onward, further design and construction cost estimates were developed, and in February 2003 the Secretary-General established the Office of the Capital Master Plan to deliver the project. The General Assembly provides formal oversight to the project and while the Secretary-General is responsible for delivery of the project's objectives, this responsibility is delegated to the Under-Secretary-General for Management, who is also responsible for providing a range of services that support the operations of the United Nations in New York. The Executive Director of the capital master plan reports to the Under-Secretary-General for Management.

10. In November 2005, in his third annual progress report on the implementation of the capital master plan (A/60/550), the Secretary-General proposed a budget of $1,588 million to deliver the capital master plan. In his fourth annual progress report of October 2006 (A/61/549), the Secretary-General explained that the budget had increased to $1,646 million because changes in market conditions had increased construction costs and professional fees. In his report the Secretary-General also recognized the need for additional scope, including extra blast security and information technology backup systems and security. With the additional scope, the projected total cost for the project was $1,877 million. On 22 December 2006, in its

resolution 61/251, the General Assembly decided to approve the revised project budget and the proposed phased approach to construction (strategy IV).

11. In September 2007 the Secretary-General, in his fifth annual progress report (A/62/364), noted delays in implementing strategy IV, referring to the complexities of United Nations decision-making and the resignation of the Executive Director of the capital master plan. The Secretary-General estimated the final cost of the project to be $2,096 million, some $220 million over budget, mainly because of slippage in the schedule and the associated impact of price inflation on construction and rental costs.

12. The Secretary-General then proposed accelerated strategy IV, involving a shorter period of renovation, fewer phases of construction and less disruption to United Nations operations. The revised estimated final cost was $2,067 million, some $190 million above the budget. The General Assembly took note of the Secretary-General's proposal on the accelerated strategy IV in its resolution 62/87.

13. Accelerated strategy IV is now being implemented. In October 2010, in his eighth annual progress report (A/65/511), the Secretary-General stated that 75 per cent of the capital master plan commitments had been procured and locked in, and the projected cost was $1,957 million, some $80 million above the budget.

14. Cumulative expenditure on the capital master plan as at 31 December 2010 was $1,335 million (see table 1). The decrease in expenditure in 2010 ($406 million in 2010 compared to $584 million in 2009) reflects the delay to construction activity caused by the need for the Office of the Capital Master Plan to address the enhanced security upgrade, described in section B.3 below:

Table 1
Capital master plan expenditure

	Expenditure (thousands of United States dollars)						*Share of the total (percentage)*					
Item	*Pre-2007*[a]	*2007*	*2008*	*2009*	*2010*	*Total*	*Pre-2007*[a]	*2007*	*2008*	*2009*	*2010*	*Total*
Salaries and other staff expenditure	8 414	3 236	3 999	5 005	5 080	25 734	12.2	7.0	1.7	0.9	1.3	1.9
Travel	74	25	30	35	9	173	0.1	0.0	0.0	0.0	0.0	0.0
Contractual services	58 425	30 279	105 069	21 145	23 920	238 838	84.6	65.3	45.8	3.6	5.9	17.9
Operating expenses	1 865	9 912	20 189	35 626	84 835	152 427	2.7	21.4	8.8	6.1	20.9	11.6
Acquisitions	284	2 942	100 324	522 030	292 149	917 729	0.4	6.3	43.7	89.4	72.0	68.7
Subtotal	**69 062**	**46 394**	**229 611**	**583 841**	**405 993**	**1 334 901**	**100**	**100**	**100**	**100**	**100**	**100**
Cancellation of prior-period obligations	1 531	10	1 438	2 055	7 062	12 096	—	—	—	—	—	—
Total	**67 531**	**46 384**	**228 173**	**581 786**	**398 931**	**1 322 805**	—	—	—	—	—	—

Source: Interim financial statements of the United Nations for the 12-month period of the biennium 2010-2011 ended 31 December 2010 and calculations by the Board of Auditors.

[a] The pre-2007 period covers 2001 to 2006.

15. Section B.7 of the present report sets out how the budget for the capital master plan has now been revised to include additional scope and sources of funding. The latest forecast from the consultant programme managers in the Office of the Capital Master Plan at the end of February 2011 was that the projected cost is now $2,061 million, some $79 million above the revised budget. The Board notes that this forecast does not include a provision for the most likely costs of identified risks and a robust and auditable estimate for the cost of all change orders until project completion, nor does it reflect all projected swing space rental costs.

3. Main areas of progress

16. The capital master plan is a large and challenging refurbishment project. Such projects have particular risks over new-builds because the condition of existing structures is often difficult to survey accurately. The late discovery of unanticipated problems with the existing conditions can lead to additional work and cost and time slippages. In the case of old buildings, such as the United Nations campus, the lack of original "as built" construction records can be particularly challenging. Moreover, the governance, communications and stakeholder management are also complex. Such complexities require rigorous project controls and processes. The Board has seen evidence of areas of good practice within the capital master plan, for example, in the integrated team working between the Office of the Capital Master Plan, its professional advisers and the main contractor.

17. In its aforementioned report for the year ended 31 December 2009, the Board reported that the capital master plan was approximately six months behind the initial schedule for accelerated strategy IV and the Office of the Capital Master Plan was projecting a final cost of $1,972 million, which was $95.2 million above the $1,877 million budget. The Board, however, notes that the whole project was affected in 2010 by a change in the design which was required to achieve greater structural protection against explosive impact. In the years prior to 2010 the growing frequency and intensity of terrorism threats, sometimes specifically against the United Nations, meant that security standards were constantly under review, with an associated ongoing and changing appreciation of the effect on the design standards relating to the capital master plan.

18. In general, the United Nations bears the cost of maintaining a secure environment within its site boundaries and the relevant host country (or any relevant political subdivision) is responsible for maintaining security beyond the United Nations site limits. In New York a specific complexity arises because the United Nations buildings overhang the Franklin D. Roosevelt Drive. The physical boundary is not vertical, hence the security responsibilities of the United Nations and the host country are less clear-cut than usual. There was a need to arrive at a clear understanding about the respective responsibilities of the host country and the United Nations and about the necessity to take joint action, and within the United Nations, while there was a growing understanding that changes might be required to the Conference Building, the nature and extent remained unclear for some time.

19. The situation crystallized in late 2010 with agreement by the host country authorities and the United Nations on the design requirements, physical solution and respective responsibilities, followed by agreement in January 2011 with the host country on a financial contribution to the estimated $100 million of additional costs

for what is termed the "enhanced security upgrade".[1] The implementation of the security enhancements was authorized by the General Assembly in April 2011 in its resolution 65/269. The search for a solution to the security issues has been the main contributory factor to a nine-month delay in the Conference Building completion date, which created a knock-on nine-month delay to the General Assembly completion date. The Board comments in the relevant sections of the present report on the impact of the enhanced security upgrade on the project schedule, scope and costs.

20. At the time of submission of the present report, the capital master plan is being delivered under 22 "guaranteed maximum price" contracts, including 7 guaranteed maximum price proposals which have been bundled into 1 guaranteed maximum price contract. Changes to the contracts are priced and evaluated on an individual basis, and the contracts are large enough so that any one change order is unlikely to be disruptive. The multicontract arrangement does, however, create the following risks:

- If the intended scope within a guaranteed maximum price contract has to change, the costs of the changes can represent reduced value for money, in particular if the changes create disruption and reduced efficiency for the suppliers
- Ensuring coordination between the various designs and construction contracts, achieving efficient and smooth timing of the flow of the work, and avoiding gaps in scope or inconsistencies between the packages becomes much more challenging.

21. The Board recognizes that the United Nations continues to bear the risks in the areas outlined above, but notes that the capital master plan team is taking reasonable steps to minimize the financial and schedule risk. A single guaranteed maximum price contract for the full scope of the project would have been impractical given that the design was not ready at the outset and indeed is still not complete. If a single guaranteed maximum price contract approach had been pursued, contractors are likely to have submitted higher prices in order to reflect increased risks, which would not have represented value for money. The project team fully understands the risks of the multiple guaranteed maximum price contract approach, and the importance of minimizing change orders and coordinating the interfaces between the guaranteed maximum price contracts carefully in order to contain costs and protect the schedule.

22. Although the project is now predicting significant delays, with the General Assembly and Conference Buildings projected to be delayed by a year, the Board acknowledges the progress achieved given the complexities and challenges faced by the project team. The achievements include the completion of the North Lawn Building and the decant of staff into temporary swing space office accommodation, involving some 6,000 person moves, while maintaining United Nation operations and the continuance of General Assembly business.

23. Progress highlights since the Board's last report include the completion of a new technology centre in the second basement level of the North Lawn Building as

[1] Of the protective work amounting to $100 million, $70 million relates to works to the Conference Building and $30 million to works to First Avenue.

well as other vital infrastructure works. Hoists on the Secretariat and Conference Buildings have also been erected, enabling asbestos removal and other demolition to commence. At the time of the audit, asbestos removal and demolition was complete on 21 of the 39 floors of the Secretariat Building and installation of the new glass curtain wall on 18 floors of that building had been completed by the end of April 2011.

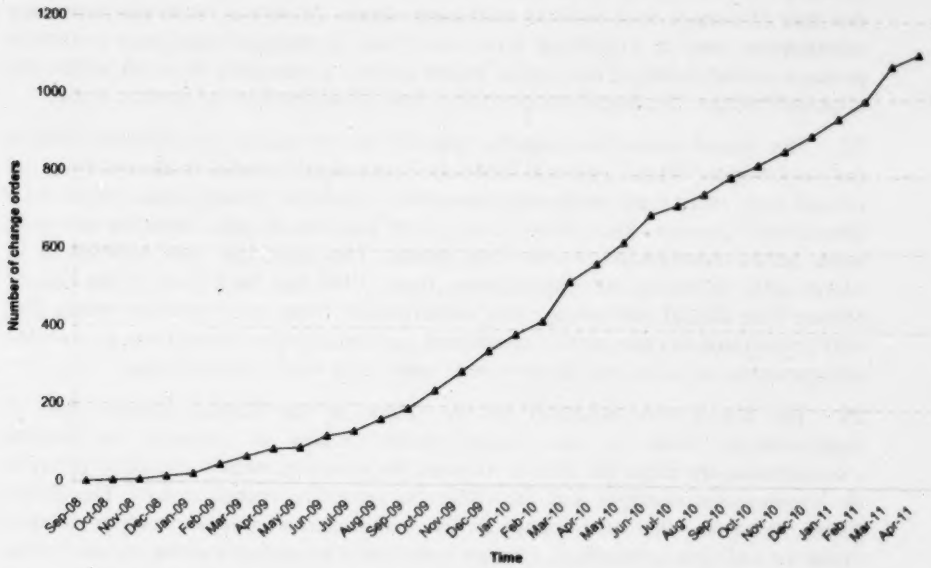
4. Change control

24. Once the work has started in any construction project, changes can and do occur. High levels of changes are a risk because of the potential to increase costs and delay project delivery. Indeed, effective change control is a well-recognized feature of successful construction projects where once, often after extensive consultation, the design is finalized, clear rules and strong governance and management are established to minimize changes. Both the Board and the Office of Internal Oversight Services (OIOS) have raised concerns in previous reports about the level of change within the capital master plan. In light of this the Board again analysed the extent of change within the project.

25. The Board found that the capital master plan continues to experience a significant level of change, from a variety of sources. The design for the plan was not completed on time and in order to protect the project schedule, guaranteed maximum price contracts are knowingly awarded on the basis of incomplete designs. This is a strategy which can necessitate a high volume of change orders as the design develops further and it is therefore essential that effective procedures are in place to minimize unnecessary changes, forecast the likely costs of future changes and process change orders efficiently. Other changes are being generated by the future users in the various Headquarters departments.

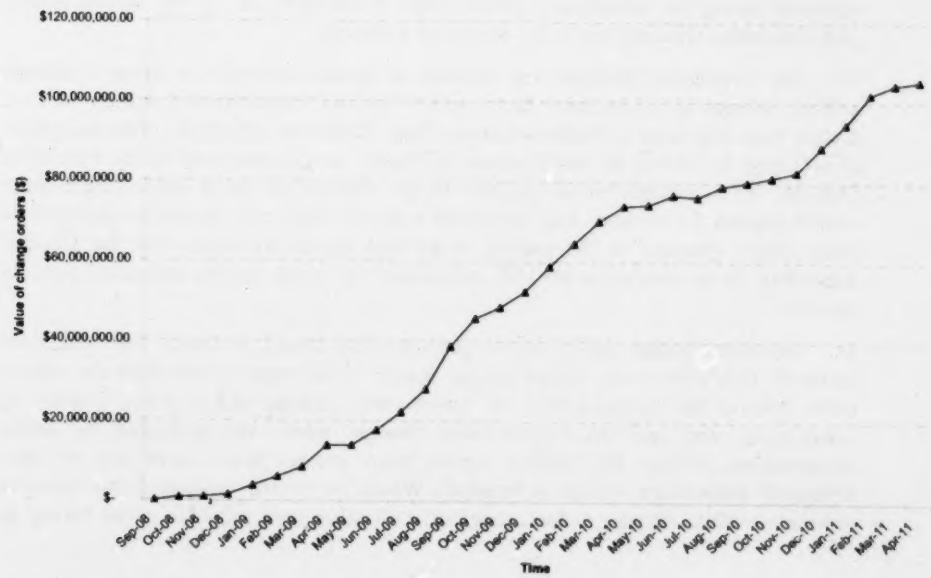
26. The Office of the Capital Master Plan has a robust process in place to handle change orders once they have arisen. However, the Administration has not established an effective system to minimize the volume of changes from the outset and, as a result, the project is characterized by large amounts of ongoing and costly change. The total volume and value of change orders continues to increase within the capital master plan, and as at 5 April 2011, the construction manager had issued 1,116 change order requests, with a value of some $103 million. Figures I and II demonstrate a continuing trend in both the number and value of change orders since the project began. These figures also show that changes have occurred at a fairly constant rate and while it is inevitable that this rate will decline as the project nears completion, there is no sign yet of such a decrease.

Figure I
Cumulative number of change orders



Source: Analysis of change order data held by the Office of the Capital Master Plan.

Figure II
Cumulative value of change orders



Source: Analysis of change order data held by the Office of the Capital Master Plan.

27. The Board is of the view that without action by the Administration to address the reasons for the changes, the trends demonstrated in figures I and II are likely to continue. With the project's schedule under pressure, there comes a point at which this rate of change will result in additional delays. Moreover, with the remaining contingency now at a reduced level, the trend in changes represents a serious pressure on the ability of the capital master project to complete the work within the allocated budget. The Board comments on these issues later in the present report.

28. The capital master plan requires approval of contractors' cost estimates before the work begins. Where approval timescales are judged to delay work that is on the critical path, there is an accelerated procedure called the "change order value to be determined" process. This process, to protect the critical path, involves initiating work before contractors provide firm prices. The procedure was established in March 2010 following recommendations from OIOS that the Office of the Capital Master Plan should stop using work authorization forms to commence works that will be included as changes to a guaranteed maximum price contract and ensure that change orders are approved in advance of associated works commencing.

29. The Board was informed by the Office of the Capital Master Plan of improvements made to the change order process in response to interim recommendations from the Board, such as, for example, weekly meetings between the construction manager and the Office to prioritize change orders. The Board found, however, that the change order authorization process remains labour-intensive and time-consuming. Change orders may be initiated at the request of the Office or the construction manager. The construction manager obtains cost estimates from trade contractors for the required work and, once it is content with the estimates, passes them to the Office for approval. The orders are then subject to review by the designers, consultant programme manager, project managers and Director of Construction in the Office prior to approval. Change orders may be approved using the established procurement procedures, or by the capital master plan Executive Director under his delegated authority.

30. The Executive Director was granted delegated authority to approve change orders, subject to an ex post facto review by the Post-Award Contract Review Committee, following a recommendation from OIOS (see A/63/266). The delegation of authority is limited so that the total of change orders approved by the Executive Director for a contract cannot exceed 10 per cent of its value and a single order cannot exceed $5 million. The delegated authority does not extend to authority to make major changes to the project scope and the Board notes that the General Assembly, in its resolution 65/269, authorized the work for the enhanced security upgrade.

31. On many major public sector projects, the Board is aware that delegated authority levels are used, within project teams, to increase the speed of the change order process by ensuring that the lower-value change orders are evaluated by lower-level staff and the higher-value change orders are evaluated by senior management. Within the capital master plan project team there are no such delegated authorities, which is unusual. When the Board examined this issue in November 2010, change orders, together with allowance requests, were taking an

average of 114 working days in elapsed time to resolve.[2] As at 5 April 2011, the Board found that the process was taking on average four days longer than in November 2010, that is, 118 days. The Office of the Capital Master Plan informed the Board that the majority of the processing time relates to the evaluation of the legitimacy of change order requests by the architectural and engineering firms, and cost review by the programme management firm.

32. The Board considers that the change order process continues to be too time-consuming. The consequential delays are problematic for trade contractors, as the process delays payments to them and adversely affects their cash flow. The construction manager regards this as a risk, potentially reducing trade contractors' goodwill and increasing the prospect of claims as a result of delays and disruption.

33. **The Board recommends that the Office of the Capital Master Plan significantly reduce the processing time and backlogs in the change order approvals process so that contractors get paid within the timescales stated in their contracts or, where contracts are silent on this matter, within 30 days after completing a change order. The latter arrangement is consistent with the time allowed to make payment under a guaranteed maximum price contract.**

Managing changes requested by occupiers

34. The Board notes that the process of moving staff into temporary swing space resulted in a large number of changes, providing useful insights about user behaviour and the effectiveness of the project's demand-led change management processes. While occupiers wanted many modifications to their spaces, under the current arrangements they are not accountable for the costs of the changes they requested. There is a risk that occupiers will continue to request large numbers of changes, in particular during the ongoing process of agreeing to final floor plans within the Secretariat Building, as acknowledged in the project's risk register.

35. The Board recognizes that many departments may not be familiar with engineering drawings or floor layouts, hence the need for potential changes sometimes only emerges when each area approaches completion. Nevertheless, the Board considers that if the volume of changes experienced to date continues, the chances of completing the project according to the current time and budgets will be at risk.

36. There are many examples of international good practice where projects have succeeded in minimizing changes driven by the eventual building occupants by ensuring that occupants are adequately consulted early in the design phase and that the change process after finalization of the design is characterized by clear rules, strong governance and robust management. The capital master plan is not following good practice in this regard and this is directly contributing to additional cost and time pressures.

37. The Board found that the Administration has not established from the outset of the project a robust occupier-related change control mechanism and clear accountabilities to control the level, nature and costs of changes being requested by occupier departments and offices, and to ensure that the cost implications of

[2] Construction contracts within the project contain allowances to cover specific uncertainties. Before the construction manager is permitted to spend these allowance sums, he or she must obtain approval from the United Nations through an allowance request.

changes are appreciated fully. The Office of the Capital Master Plan instead relies on the goodwill and cooperation of occupier departments and seeks to achieve this by providing information packs relating to the physical layouts of their spaces. The Board, however, considers that relying on cooperation is insufficient at this stage of the project. There is now an increasing risk of delays associated with any major changes to the Secretariat Building floor plans in particular, potentially preventing the completion of that building in the time specified within the schedule.

38. **The Board recommends that the Administration, working with the Office of the Capital Master Plan:**

(a) **Immediately review the change orders trends and identify the reasons and source of requests for changes;**

(b) **Establish clear rules, strong governance and robust management to minimize occupier-driven changes.**

5. Handover of buildings to the Facilities Management Service

39. On any project, the handover from the construction to live building operations involves what is called a "commissioning phase". This involves testing the functions of the building, including its plant and building control systems, and often involves substantial training for the facility management function and its suppliers. In the case of the United Nations, the commissioning phase represents a bigger challenge than usual, because antiquated systems are being replaced by unfamiliar state-of-the-art computer-driven ones that will control modern plant and machinery. The incumbent staff in the Facilities Management Service will have to acquire new skills ahead of the commissioning process.

40. It is vitally important that the Facilities Management Service is ready to take responsibility for buildings promptly at the dates agreed with the Office of the Capital Master Plan. Failure to do so is very likely to result in prolonged or disruptive handover sequences, additional costs from, for example, longer temporary office rentals, and potential disruptions in the delivery of United Nations business.

41. In November 2010 the Board noted that a full transfer of responsibility from the Office of the Capital Master Plan to the Facilities Management Service was not achieved for the North Lawn Building until 10 months after the planned handover date. A combination of issues arising both within the Service (including lack of preparedness and lack of resources) and within the Office (including ongoing changes and incomplete "as built" drawings) meant that the handover to the Service had to be delayed.

42. The risk register of the capital master plan identifies a specific risk regarding handover and commissioning within the basements which house the United Nations technology, information technology, security control rooms and other critical mechanical and electrical systems. As such, they have far greater significance than any of the work handed over so far because of the complexity of the infrastructure technology and because the campus buildings cannot function without that infrastructure.

43. In an interim management letter on the capital master plan in early 2010 the Board recommended tightening the planning for commissioning and handover. The

Board notes that, subsequently, the Office of the Capital Master Plan and the Facilities Management Service have built on the lessons learned from the experiences associated with the North Lawn Building and have now developed a jointly agreed handover process between the two parties. The Service is also:

- Recruiting more staff specifically dedicated to working with the Office of the Capital Master Plan
- Providing additional training to its operational staff on managing modern building management systems
- Engaging a consultant to support the handover process.

44. The Board also notes that the Facilities Management Service is embarking on a major internal project to update its procurement approach and the way it delivers its services. In the long run the Board regards this as the right approach. Having fewer suppliers each with simpler performance measures that are related more to service provision will increase clarity of responsibility and reduce management effort. In the short term, however, and in particular in the run-up to the commissioning process in 2012, this potentially represents an additional management burden at a time of significant demand and risk.

45. The Board also notes that as a result of slippages in the overall project schedule in 2010, the commissioning sequence has been changed significantly. The intended sequence in which the Conference Building was to be commissioned ahead of the Secretariat Building has had to be reversed and there is now little or no gap between the two sequences, increasing the risk of problems occurring during handover. The Board considers that, in line with international good practice in construction and taking account of the cost implications, there could be benefits in retaining at least one senior official from the Office of the Capital Master Plan supported by resources from the construction manager, for at least the first year after completion, to support handover to the Facilities Management Service, facilitate a transfer of knowledge to the new team and assist if any difficulties should arise in the early stages post-handover.

46. **While recognizing the progress made since November 2010, the Board recommends that the Under-Secretary-General for Management should, as a high priority management action, review jointly the state of readiness for commissioning and handover within the Facilities Management Service and the Office of the Capital Master Plan on a quarterly basis.**

47. **The Board also recommends that the Administration consider ways to retain expertise from the Office of the Capital Master Plan to support the handover to the Facilities Management Service.**

6. Project timescales

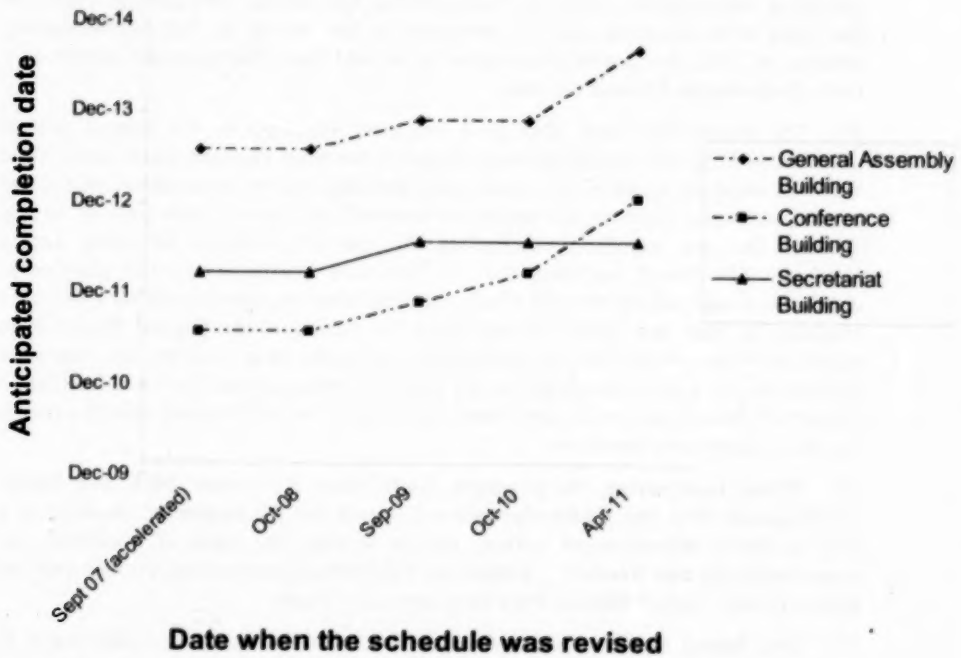
48. The first migrations of staff back into the Secretariat Building will begin three months after the completion projection issued by the Office of the Capital Master Plan in the accelerated strategy IV, the General Assembly and Conference Buildings are projected to be delayed by a year and there is the potential for scope reductions to the planned work on the Library and South Annex Buildings. The strategy aimed to complete all aspects of the capital master plan by mid-2013 (see annex II), the Secretary-General, in his eighth annual report (A/65/511) showed the completion

date had slipped to late 2013 and the Board found that the most recent schedule indicates the project has slipped further and the General Assembly Building is now projected to be completed in mid-2014.

49. Over time, the forecasts of the Office of the Capital Master Plan have proved to be optimistic (see figure III). The Board is concerned that the pattern of slippage will continue, increasing the risk of higher contractor costs and overheads. The Board notes that delays to the Secretariat Building will potentially have the greatest impact on cost and disruption to United Nations operations because it houses the majority of staff being moved back from the swing space. It is therefore imperative that the Administration keep delays to the Secretariat Building to a minimum.

Figure III

Anticipated completion dates for the three main buildings of the capital master plan



Source: United Nations Board of Auditors (see note).

Note: The anticipated completion dates are taken from the Secretary-General's annual reports, except for April 2011 data, which were obtained during the Board's fieldwork. The annual reports state anticipated completion dates in the form of early, mid or late parts of the year. The graph plots "early" as 28 February, "mid" as 30 June and "late" as 31 October.

50. The Board examined the controls and management processes of the Office of the Capital Master Plan in November 2010 and found that while schedules existed for each individual building, integration between the schedules was a manual process, as the schedule was still under development. The Board highlighted the need for a fully integrated schedule and in April 2011 noted that work to integrate

the schedule had been completed. In process terms, the Board believes that the Office now has the right tools and techniques in place to enable realistic forecasting of the project schedule.

51. In practical terms, however, the schedule is extremely tight and little potential remains to absorb additional delays or scope changes. Given the trend of slippage seen so far (see figure III) and other pressures on the schedule, it may be realistic to expect further slippages in future. The six main pressures are described below.

52. **The importance of the "quiet period" over Christmas 2012.** In early 2011 the forecast completion date for the Conference Building slipped to early 2013. The Office of the Capital Master Plan, working with the construction manager, altered its approach to bring forward the completion date to 21 December 2012 in order to take advantage of the "quiet period" over Christmas to move vital broadcast services. Missing this window would push back the Conference Building work to the next "quiet period", in mid-2013, potentially increasing costs and delaying the General Assembly Building. Alternatively, it may become necessary to initiate costly night and weekend working in order to protect the schedule.

53. **The risks of delays associated with excessive change orders.** As the project moves towards its completion phase, the Headquarters departments need to stick to decisions and resist making changes. As explained in section B.4, changes from the occupiers are costly and have the potential to delay project completion.

54. **Dependencies on third parties.** The schedule's critical path contains many dependencies on the work of other parties who are not under the direct control of the Administration. For example, the structural reinforcement work above the Franklin D. Roosevelt Drive requires permits and timely lane closures from the host city authorities, utility companies have to complete work on the Drive and on First Avenue, and the host city electrical utility has to complete essential critical path connections in the basement vault. Such third-party dependencies, while inevitable, create inherent uncertainties and raise the risks of cost increases and schedule delay.

55. **Although plans are in place for the three main buildings, there are major uncertainties about the intentions for the Dag Hammarskjöld Library and South Annex Buildings.** The Library and South Annex are part of the capital master plan's scope of work approved by the General Assembly under accelerated strategy IV. The Board was informed by the Office of the Capital Master Plan that the latest forecast cost for renovating those buildings as originally intended is $65 million. The agreed budgets for the capital master plan do not separately identify the costs for those buildings. The new security requirements mean that the original plans for renovating those buildings are no longer viable and the proximity of the buildings to Forty-second Street has so far ruled out a practical solution. Design work has halted and at the time of the present report, the Office does not have a viable solution for the two buildings.

56. The situation is further complicated by the possibility of development plans in neighbouring blocks which might significantly or perhaps totally remove the assessed security risk. It is too early to judge at the moment and the net result of this uncertainty is that the schedule cannot be calculated for the two buildings. If the Library and South Annex are to be refurbished within the timescales of the capital master plan, procurement needs to be completed by January 2013, which means that the design work must be well under way within 2011. However, this state of affairs

depends on the Administration fully reviewing the situation regarding the Library and South Annex Buildings, and confirming the approach to be taken on this part of the capital master plan scope.

57. **Financial donations, while welcomed by the project, create a schedule risk.** Donations from Member States help to fund specific room designs and are of financial and historic importance to the capital master plan. Five Member States have donated a total of $6 million and another three Member States are considering further donations. Each Member State will nominate an architect or designer to work with the Office of the Capital Master Plan in specifying the area to be donated. The joint design development activity between the project team and the Member State's nominee could potentially delay completion unless governed by a strong framework with agreed timescales for design decisions.

58. **Delays in approving guaranteed maximum price contracts.** The process for approving contracts is time-consuming, involving numerous iterative steps as well as negotiations between the concerned parties, although the Board notes that the Office of the Capital Master Plan uses "task orders" to commence early works, while guaranteed maximum price contracts are still in the review process. The Board found that the average time elapsed from the moment the construction manager submits guaranteed maximum price contracts to approval from the Administration is 113 days. The current schedule for the Conference Building and Permanent Broadcast Facility assumes contract approvals within 42 days in order to meet the forecast building completion dates. Unless the procurement process can accelerate to meet schedule requirements, the completion dates are at risk of further slippage.

59. **The Board recommends that the Administration:**

(a) **Resolve the security issues and lack of a viable design solution for the Library and South Annex Buildings as a matter of urgency;**

(b) **Confirm whether the two buildings are to remain in scope and, if so, what the approach to resolving the security challenges should be;**

(c) **Seek approval for the proposed course of action for the two buildings from the General Assembly.**

60. **The Board also recommends that the Administration prioritize the approvals process and timing for the remaining guaranteed maximum price contracts and amendments so as to achieve the 42-day elapsed time period assumed in the schedule.**

7. Budget management

Latest budget and anticipated final cost

61. Following the approval of the $1,877 million budget for the capital master plan in 2006, two sources of additional funding have arisen. First, as mentioned above, additional specific commitments for donations totalling $6 million have been received from five countries. Secondly, the host country has made a contribution of $100 million towards the costs of the enhanced security upgrade. The total revised budget for the capital master plan is therefore currently some $1,983 million.

62. The latest forecast (as at the end of February 2011) of the anticipated final cost of the project is reported by the consultant programme managers of the Office of the Capital Master Plan as $2,061 million, some $79 million (4 per cent) above the revised budget. The Board notes that this cost forecast does not include a provision for the most likely costs of identified risks and a robust and auditable estimate for the cost of all change orders until project completion, nor does it reflect all projected swing space rental costs. The Board is therefore of the view that this situation is more likely to worsen than improve, but that further overexpenditure and delay can be minimized if the Administration is able to take quick and firm action to fully address the concerns raised in the present report. Table 2 below shows how the main costs have changed over time.

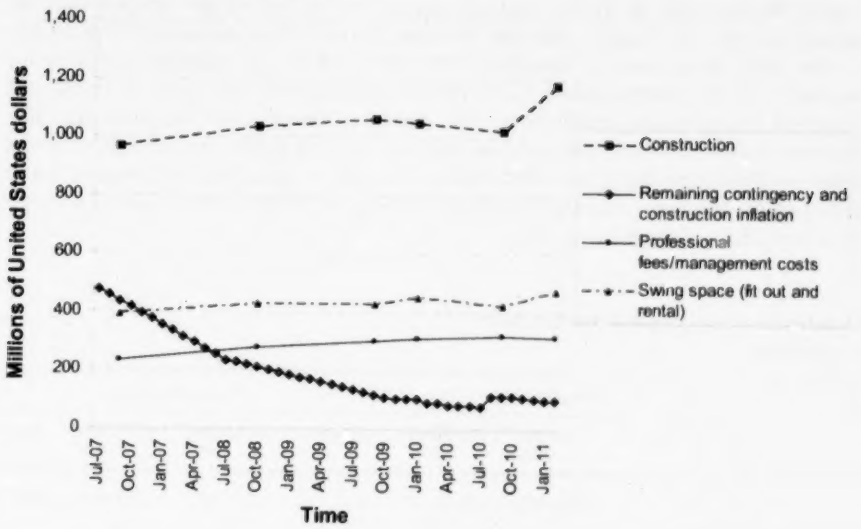
Table 2
Anticipated expenditure of the capital master plan
(Thousands of United States dollars)

	Strategy IV	*Accelerated strategy*					
Item of expenditure	*October 2006*	*September 2007*	*October 2008*	*September 2009*	*January 2010*	*September 2010*	*February 2011*
Construction	935 300	964 625	1 032 900	1 057 402	1 045 605	1 016 920	1 094 121
Enhanced security upgrade construction	—	—	—	—	—	—	82 185
Professional fees, management costs	231 000	234 508	280 340	302 365	311 772	316 549	302 069
Enhanced security upgrade fees	—	—	—	—	—	—	10 713
Swing space fit-out and rental	214 487	389 858	425 695	426 881	450 919	421 113	468 936
Contingency and forward price escalation	495 900	477 819	235 236	181 423	163 587	202 209	96 628
Additional contingency for the enhanced security upgrade	—	—	—	—	—	—	6 659
Total project cost	**1 876 700**	**2 066 810**	**1 974 171**	**1 968 071**	**1 971 884**	**1 956 791**	**2 061 311**
Budget	1 876 700	1 876 700	1 876 700	1 876 700	1 876 700	1 876 700	1 982 700
Variance against budget	**0**	**190 110**	**97 471**	**91 371**	**95 184**	**80 091**	**78 611**

Source: A/62/364, A/65/5 (Vol. V), A/65/511 and the monthly cost report for March 2011 of the project's consultant programme manager.

63. Figure IV illustrates graphically the cost changes set out in table 2.

Figure IV
Trends in project costs over time



Source: Analysis of data held by the Office of the Capital Master Plan.

64. The main points to note are:

- Anticipated final construction costs and management fees, relating mainly to the enhanced security upgrade, have risen recently
- The contingency balance has been diminishing over time and, at the end of March 2011, stood at $96 million. The rate of decline in the total balance of contingency has been diminishing in recent years despite the ongoing pressure from change orders, because recent contract prices have been lower than expected prices. The resultant savings have supported the contingency fund.

Forecasting, contingency funds and cost uncertainties

65. On any major project, it is very important to have an accurate and current forecast of the future final cost so that the client and those responsible for governance and funding have a realistic expectation of whether or not the project will reach completion within the allocated budget and can take early and appropriate action if costs are seen to be escalating.

66. The Board found that the approach taken by the Office of the Capital Master Plan to recording actual costs is robust. The actual costs are recorded in detail and are challenged first by the construction manager, then by the consultant programme manager and lastly by the Office team. Audit trails are in place and the Procurement Division is appropriately involved in the main processes.

67. The Board found that the approach to planning and allowing for the costs of future guaranteed maximum price work is also robust. Costs are estimated by the construction manager and the independent cost consultant and, in general, there have been few surprises in this area. In practice, the estimated costs have been

higher than the prices actually incurred in the market, with the "buyout savings" held within the project's contingency fund.

68. The Board found, however, that the approach taken to estimating future costs, such as the most likely cost of identified risks or future change orders, is not sufficiently analytical. This gives rise to uncertainty as to whether the remaining contingency allowance is sufficient to see the project through to completion, or whether the current reported overrun will increase further. The main deficiencies in approach are:

- No specific or quantified allowance is made for the ongoing effect of change orders. The change order trend is evident enough, but the project team is not using it to help predict the future costs of changes. The reported contingency is the difference between the original contingency sums and the costs of changes committed to date. As a result of this balancing sum approach, the opportunity is missed to make a more informed forecast of the future costs of changes, which in turn means the overall cost forecast is not as robust as it should be
- While the risk register contains many items which, should they materialize, would have an adverse impact on costs, the Office of the Capital Master Plan has not made a probability-based, or indeed any, allowance for their potential cost effects.

69. Given the continuing pattern of change orders, the scale and nature of the remaining risks, and the continuing pressure on the schedule, the Board is concerned that the remaining $96 million of contingency may be insufficient and that the budget may be exceeded by an amount greater than currently stated. The Board is also aware of other factors that place additional pressure on the budget, for example:

- The current cost forecast includes swing space rent until 30 September 2012, but full migration of staff back into the Secretariat Building is not due to be completed until December 2012 and the leased swing space is not due to be released until April 2013. The current cost forecast therefore does not include all projected swing space costs. The Office of the Capital Master Plan and the Facilities Management Service are currently deciding which leased spaces will be retained or terminated. The most recent modelling carried out within the Office suggests the unbudgeted rental costs from September to December 2012 will total $22.2 million. In addition, there could be costs of up to $23.7 million for early termination of the leases. It has not yet been decided how such costs would be divided between the Office and the Service
- The Board has already noted the potential need to initiate night or weekend working in order to observe critical dates. The Office of the Capital Master Plan informed the Board that at least two of the guaranteed maximum price contracts included a provision whereby overtime would be required and allowances were made within the contracts to that effect. This was not the case of all the contracts and acceleration work on the North Lawn Building and within the basements has so far cost more than $5 million and $3 million, respectively. While these costs were funded from the contingency funds under the change order process, there is a risk that ongoing and future acceleration will add to the total project cost
- Two claims have so far been submitted by trade contractors for additional payment. While the first claim appears unlikely to add to the anticipated final

cost, the second claim is likely to be addressed with change orders and has some potential to result in additional project costs. There is also the risk of claims for additional payment made by trade contractors who are being asked to accelerate their work in the Secretariat Building. Negotiations are ongoing with the trade contractors about whether they will agree to accelerate the work without requiring additional fees

- While the host country has contributed $100 million for the enhanced security upgrade, the latest version of the risk register of the capital master plan seen by the Board identifies an uncertainty regarding the full extent of those costs. A breakdown of costs can be found in annex IV to the present report. The Board notes that the recent procurement exercise for the steelwork in the Conference Building has been in line with expectations. Nevertheless, the costs of the enhanced security upgrade is a high-risk area given the dependency on third-party approvals and the need for lane closures along the Franklin D. Roosevelt Drive.

70. **The Board recommends that the Office of the Capital Master Plan strengthen the approach to cost forecasting by including a robustly calculated and auditable estimate for the costs of all change orders until project completion, allowing for the most likely costs of the items in the risk register and for other known issues, such as prolonged property rentals arising from the schedule slippage.**

Provision for cost escalation

71. The cost forecasts for the project provided by the Secretary-General have in the past included a provision for future cost inflation ("cost escalation"). The Board observes that the cost escalation allowance is no longer reported at a summary level, although specific allowances remain at subproject levels, ranging from 1 to 3 per cent. On this basis, the anticipated final cost of the project contains approximately $17 million for cost escalation.

72. The Board also notes that the Turner building cost index[3] for 2009 and 2010 shows that construction cost inflation has in fact been negative in recent years (implying that the overall forecast for the project should be reported as falling). The Board's conclusion is that the project has been overcautious in its estimates of future construction cost inflation in recent years, a conclusion supported by the fact that the project has been achieving actual contracted prices below the forecast cost estimates (termed "buyout savings" by the project team, with the savings augmenting the contingency fund, as noted in para. 67).

73. **The Board recommends that the Office of the Capital Master Plan:**

(a) **Review its approach to allowing for the effects of future construction price inflation in line with published indices;**

(b) **Clarify and simplify its reporting in this area when little or no inflation is expected.**

[3] The Turner building cost index is a reference for changes in construction costs for the United States market. The average index was showing significant deflation for 2009 of -8.4 per cent and for 2010 of -4.0 per cent. The index is determined by the following factors: labour rates and productivity; material prices; and the competitive condition of the marketplace.

Associated costs

74. In addition to the costs included within the capital master plan budget, there is a range of other "associated costs" for goods or services which, though made necessary by the work of the plan, are not directly attributable to the plan's refurbishment operations and were therefore excluded from the original budget. The major associated costs are for:

- Acquisition of furniture throughout the campus ($44 million)
- Provision of a new permanent broadcast facility ($40 million)
- Additional security resources for site security during construction and security training ($28 million)
- Logistical management, asset tracking, audio-visual migration and temporary additional staffing within the Office of Central Support Services ($20 million)
- Archiving ($2.7 million)
- Construction of the primary security command centre and physical security systems ($1.8 million).

75. The most recent forecast for the associated costs was reported to the General Assembly in March 2011 and amounted to $158.9 million.[4] The Assembly requested in April 2011 that the Secretary-General spend $13 million less on specific associated costs, reducing the anticipated final expenditure to approximately $145.9 million (see resolution 65/269). The Board notes that the sum of $145.9 million is for associated costs until December 2012; delays in the project schedule beyond that date will potentially increase the associated costs and there now is a need to revisit the cost assumptions in line with the latest scheduled completion dates.

76. One of the major components of the associated costs is the campus-wide procurement of furniture. An estimate given to the Advisory Committee on Administrative and Budgetary Questions in February 2011 put the furniture and systems furniture[5] costs at $55 million. The Office of the Capital Master Plan is developing an alternative strategy involving greater reuse of existing furniture and less purchasing of new furniture to reduce the costs by some $11 million. The Office informed the Board it was confident that could be achieved in terms of the physical procurement, but it was assessing the practicalities and risks associated with that option and whether the benefits outweighed the potential costs.

77. The General Assembly has previously requested the Office of the Capital Master Plan to absorb the associated costs and the majority of costs for a secondary off-site data centre within its budget (see resolutions 63/270 and 65/269). The Office has so far been meeting the associated costs from the project's cash reserves and its projections show that regardless of other cost pressures, if the project continues to fund the associated costs, it will begin to experience serious cash flow problems in 2012.

[4] Supplementary information provided to the General Assembly by the Office of the Capital Master Plan in March 2011.

[5] Systems furniture is a term used to describe immovable items of furniture within an office space such as cubicles, panelling, work surfaces and shelving. See A/65/511/Add.1, para. 44.

78. The Advisory Committee on Administrative and Budgetary Questions, in its report on the capital master plan (A/65/725), noted concern that there may be difficulty in absorbing the associated costs and recommended that the General Assembly request the Secretary-General to make proposals, by no later than the second quarter of 2011, on how best to deal with the associated costs, including through improved cost-efficiency measures.

79. The Board is concerned about the continued lack of clarity regarding the associated costs and considers that the project is unlikely to be able to absorb the associated costs without either a reduction in the scope of the capital master plan or a potential increase in the anticipated final cost to approximately $2,227 million (see table 3). The Office of the Capital Master Plan informed the Board that the Under-Secretary-General for Management would provide the General Assembly with a strategy to fund the associated costs in the autumn of 2011.

Table 3
Capital master plan anticipated final costs
(Millions of United States dollars)

	Anticipated final costs
Capital master plan current forecast	2 061.3
Associated costs	145.9
Secondary data centre	19.8
Total	**2 227.0**

Source: The data relating to the secondary data centre is contained in supplementary information provided to the General Assembly by the Office of the Capital Master Plan in March 2011. The budget for the centre, unlike the forecasted associated costs which are reviewed and approved by the Assembly each year, includes $20.97 million of finite funding approved by the Assembly. Further explanation of the associated costs figure is presented in section B.7 of the present report.

80. **The Board recommends, for the sake of project certainty, that the Administration and those responsible for governance clarify the question of budgetary responsibility for the associated costs by making a clear decision about the way in which they will be funded.**

81. **The Board also recommends that the Administration, when assessing the associated costs forecasts, take into account the full impact of the most recent scheduled completion dates.**

82. The Administration informed the Board that, following discussions on associated costs with the General Assembly during the first resumed part of the sixty-fifth session, revised forecasts for associated costs would be presented to the Assembly at the main part of its sixty-sixth session, in the context of the Secretary-General's ninth annual progress report. The Administration also stated that the Assembly had been clear that the associated costs must be absorbed into the budget for the capital master plan (see resolution 65/269). The Board remains of the view that in practice this will lead either to a reduction in project scope or to an increase in the project budget and that there remains a need for greater clarity and certainty on the way in which this matter will be resolved.

8. Benefits of the capital master plan

83. When any organization embarks on a major office refurbishment, it is usually the case that significant operational efficiency savings can be achieved, for example in terms of more efficient and productive use of space and methods of work, or in terms of energy efficiencies. In the case of the capital master plan, the main benefit is offices fit for their intended purpose (for example, by removing asbestos and by replacing antiquated heating and ventilation systems). Substantial energy savings have also been identified.

84. The Board notes that energy efficiency is a major objective of the project and that the Office of the Capital Master Plan regularly monitors achievement of that objective as part of the ongoing design process. The Board sees too that the Administration has grasped many of the wider potential benefits of the capital master plan, for example, by taking the opportunity to group the main senior management teams in the Secretariat Building as a means of achieving more effective teamwork, rather than simply populating the building as before. The Administration also intends to implement a more modern open plan office space approach (rather than the cellular office layout used previously) for many grades of staff, which could improve interactions, teamwork and communication.

85. The Board is, however, concerned that the Administration is missing the opportunity for more efficient use of the space and real savings by adopting a policy of allocating one desk to one person. In practice, 100 per cent of an organization's staff are never seated at their desks at the same time. Desks and rooms lie unoccupied because staff are away on business, in meetings or conferences, on sick leave or holiday, and it is not untypical for desk occupancy levels to be in the range of 30 to 50 per cent in public sector organizations. This means that an organization does not need to pay for enough desks and space to house all of its staff simultaneously and can achieve significant savings by reducing the amount of office space for which it pays.

86. In many business and public sector organizations it is now common practice to use "hot desking", which is a method of using desk space flexibility so that staff can access their computers and work at any desk that is free, rather than allocating a specific desk for each staff member. This can typically enable organizations to reduce their desk numbers by 30 per cent and thereby achieve significant savings in office rental, furniture and energy costs. If managed well and with good use of available information and communications technology, there is no negative impact on operational effectiveness, with in practice benefits realized through the ability to easily move staff and restructure teams flexibly.

87. Given the potential cost overruns reported earlier, the Board considers that this is a cost reduction opportunity that the Administration should examine before the seating allocations in the off-campus buildings are finalized. The adoption of a flexible desk use policy would allow more departmental staff to be based within the Secretariat Building and allow the United Nations to dispose of a greater amount of the property that it currently rents. It would not be unrealistic to expect an ongoing reduction of at least 10 to 20 per cent of the current rental costs by adopting such a policy.

88. The Board also notes that the capital master plan provides a significant opportunity to streamline office records management through greater digitization or

off-site archiving of records and information. Despite the fact that the Office of the Capital Master Plan issued records management guidelines in 2008 which presented guidance on digitization, the floor plans of the Secretariat Building contain large numbers of filing cabinets. Projections from the consultant programme managers show that filing cabinets for the compound will cost from $3.2 million to $6.4 million and will take up significant floor space.

89. The Board concludes that the Administration is not addressing the full range of potential benefits that could be delivered by the project.

90. **The Board recommends that the Administration:**

(a) **Establish a small senior management group, supported by an independent space planning expert authority, to review all of the potential benefits arising from the project;**

(b) **Ensure that the group works towards the benefits in a systematic and coherent way.**

91. **The Board also recommends that the Administration consider ways in which to use space more efficiently through, for example, "hot desking" and reduced physical filing space as a policy, and ensure a rapid conclusion aligned with the scheduled moves of staff and office furniture within the United Nations campus and other properties.**

9. Succession planning and team stability

92. The capital master plan is very reliant on a small number of senior individuals, an issue recognized in the project's risk register, which mentions the potential for loss of knowledge and the impact on decision-making and progress should senior members of the team depart at short notice. This risk will be more acute as the project's completion date approaches, when individuals, especially those on fixed-term contracts, understandably focus on their own work continuity. This has the potential to result in an unplanned reduction in project staff.

93. Within the Office of the Capital Master Plan, 13 of the 26 staff are on permanent contracts, 11 have fixed-term contracts and 2 have short-term, generally temporary assistance, contracts. Those with permanent contracts will be looking for suitable internal posts and given the long recruitment times within the United Nations, their chosen departure dates may not always align with the remaining requirements of the capital master plan.

94. The Board found that the Administration has no plan in place to enable it to react quickly to fill other vacancies in the project's leadership team if they should arise. The Board was informed by the Administration that current United Nations human resources management rules and regulations did not allow for such planning and rapid response. The Board is of the view, however, that the inability to quickly replace critical staff is a real risk and requires an effective mitigation strategy.

95. **The Board recommends that the Administration establish a risk mitigation strategy to fill unexpected vacancies in critical positions within the Office of the Capital Master Plan management team at short notice.**

96. **The Board also recommends that the Administration consider whether a similar arrangement should apply to other teams involved in major business transformation programmes elsewhere in the United Nations.**

10. Procurement

International procurement

97. The Administration informed the Board that it had been keen from the outset to encourage the widest levels of participation by vendors on an international basis in the capital master plan. The Board notes that the Office of the Capital Master Plan continues to explore ways to increase participation from vendors from developing countries and countries with economies in transition. This includes placing advertisements, holding road show events and using notes verbales to ask missions to encourage bids from vendors.

98. As at 26 April 2011, just over $12 million of goods and labour within the capital master plan had been procured from vendors from developing countries and countries with economies in transition, representing 2 per cent of the total goods and labour procured within the project. The Board recognizes that the Office of the Capital Master Plan follows the United Nation procurement rules that do not permit favouring bidders from any particular country. Awards are made on the basis of the lowest price or best value for money and the Administration informed the Board that vendors from the host nation had gained the majority of contract awards owing to the relative advantage of sourcing labour and materials locally rather than from overseas.

Post-Award Review Committee

99. The Board has previously commented on the need for ongoing scrutiny of awarded and amended contracts to ensure alignment with the United Nations procurement rules and regulations, to provide learning opportunities for future procurements and to maintain independent control over the regularity of contractual changes in a situation where the Executive Director of the capital master plan has a significant level of delegated authority. The Board, in its progress report for the year ended 31 December 2008 (A/64/5 (Vol. V)), recommended that the Administration "take appropriate measures to regularize the transactions that occurred under the authority granted to the Director of the Procurement Division in accordance with the memorandum of the United Nations Controller and approved on 15 November 2007".

100. The Board also recommended that "as long as no ex post facto review procedure is secured, [the Administration] make every effort to involve the Headquarters Committee on Contracts in the adjudication process prior to signing or amending contracts that are within the scope of the authority of that Committee". More generally, the Board recommended that the Administration "consider ways and means to increase significantly the level of internal control over amendments to contracts relating to the capital master plan".

101. The Administration's response was to set up the Post-Award Review Committee, which reports to the Department of Management, so as to provide review and comment on procurements within the United Nations. The Committee has interpreted its remit as retrospectively reviewing all contract amendments of

values from $0.5 million to $5 million in order to decide whether procurement actions were appropriate. The Committee was established in October 2009 but did not become operational until April 2010 owing to a delay in agreeing on its operating procedures and membership.

102. The Board is aware that the Committee is revisiting its operating procedures because there is a considerable backlog in its work. At the time of the Board's audit, the Committee had considered only 13 of the 154 relevant contract amendments.[6] The backlog is currently growing and the Board is concerned that the Administration is not deriving either enhanced control or timely value from this review process. The Board is also concerned that the backlog is likely to become unmanageable if the present trend continues and notes the concern of the Office of the Capital Master Plan that the impact of handling the backlog could also impact the ability of the Procurement Division to process new contracts and amendments in a timely manner, which in turn could impact the capital master plan schedule.

103. **The Board recommends that the Administration urgently review the effectiveness of the Post-Award Review Committee, with a view to streamlining its operation, and balance appropriately the need for assurance and control with the need to protect the project schedule and work of the Procurement Division.**

C. Acknowledgement

104. The Board of Auditors wishes to express its appreciation for the cooperation and assistance extended to its staff by the Under-Secretary-General for Management and the Assistant Secretary-General for the capital master plan, and members of their staff.

(*Signed*) **Liu** Jiayi
Auditor-General of China
Chairman, United Nations Board of Auditors

(*Signed*) Amyas **Morse**
Comptroller and Auditor-General of the
United Kingdom of Great Britain and Northern Ireland
(Lead auditor)

(*Signed*) Terence **Nombembe**
Auditor-General of South Africa

12 July 2011

[6] Each contract amendment considered by the Committee has included reviews of several change orders.

Annex I

Status of implementation of recommendations for the year ended 31 December 2009[a]

Summary of the recommendation	*Paragraph reference*	*Financial period first made*	*Implemented*	*Under implementation*	*Not implemented*	*Overtaken by events*
1. Refine the donations policy to clarify the status of past sponsorships	31	2009			X	
2. Review unliquidated obligations corresponding to the rents associated with the capital master plan	43	2009	X			
3. Review the rent partition between the capital master plan fund and other funds	44	2009	X			
4. Include an analysis of the trends in the total cost of the project and their causes in the annual progress report	51	2009	X			
5. Detail the economic assumptions used to arrive at the cost estimate for the project	57	2009 (first made in 2007)			X	
6. Reassess the merits of the value engineering programme	62	2009		X		
7. Reduce to a strict minimum requests for change orders	67	2009		X		
8. Establish a typology of the causes of construction cost overruns	73	2009	X			
9. Distinguish between the provision for contingencies and that for forward pricing escalation	79	2009 (first made in 2008)			X	
10. Reassess the appropriateness of the scope and the level of the provision for contingencies	84	2009			X	

[a] See *Official Records of the General Assembly, Sixty-fifth Session, Supplement No. 5* (A/65/5), Vol. V.

Summary of the recommendation	*Paragraph reference*	*Financial period first made*	*Implemented*	*Under implementation*	*Not implemented*	*Overtaken by events*
11. Extend the scope of the provision for forward price escalation to include professional fees and management costs	87	2009	X			
12. Make provision for delays in the schedule of the project and continue to consider ways to mitigate delays	99	2009 (first made in 2008)	X			
13. Define once and for all the main measures relating to refurbishing workspaces	102	2009	X			
14. Perform a cost/benefit analysis for the gradual move back into part of the Secretariat Building	104	2009	X			
15. Perform a cost/benefit analysis on postponing negotiations on contracts related to the Conference Building	110	2009				X
16. Prevent any functional change in the project relating to the Conference Building after the signing of the work contracts	112	2009		X		
17. Perform a cost/benefit analysis on postponing negotiations on contracts relating to the General Assembly Building	115	2009	X			
18. Reduce to a strict minimum requests for change orders with regard to the use and configuration of basement rooms	118	2009		X		
19. Expedite the functioning of the Post-Award Review Committee	129	2009			X	
20. Improve the management of the files for the amendments	147	2009		X		
Total			**9**	**5**	**2**	**4**
Percentage share of total			**45**	**25**	**10**	**20**

Annex II

Project timetable

The project timetable until March 2011 is as follows. Changes to the schedule subsequent to that date are discussed in annex III and in section B.6 of the present report.

	September 2007[a]		*October 2008*[b]		*September 2009*[c]		*October 2010*[d]		*March 2011*[e]	
Aspect of the capital master plan	*Start*	*Complete*	*Start*	*Complete*	*Start*	*Complete*	*Start*	*Complete*	*Start*	*Complete*
Overall timescale for the capital master plan project	Early 2008	Mid-2013	Early 2008	Mid-2013	Late 2008	Late 2013	Mid-2008	Late 2013	Mid-2008	Mid-2014
Construction of North Lawn Building	Early 2008	Mid-2009	Early 2008	Mid-2009	Mid-2008	Late 2009	Mid-2008	Late 2009	Mid-2008	Late 2009
Secretariat Building	Early 2009	Early 2012	Early 2009	Early 2012	Late 2009	Mid-2012	Early 2010	Mid-2012	Early 2010	Mid-2012
Conference Building	Mid-2009	Mid-2011	Mid-2009	Mid-2011	Late 2009	Late 2011	Early 2010	Early 2012	Early 2010	Late 2012
General Assembly Building	Mid-2011	Mid-2013	Mid-2011	Mid-2013	Late 2011	Late 2013	Early 2012	Late 2013	Late 2012	Mid-2014
South Annex Building	Early 2011	Early 2012	Early 2011	Early 2012	Late 2011	Early 2013	Early 2012	Mid-2013	TBD	TBD
Library Building	Early 2012	Early 2013	Early 2012	Early 2013	Early 2013	Late 2013	Early 2012	Late 2013	TBD	TBD
Site landscaping	Mid-2011	Mid-2013	Mid-2009	Mid-2013	Mid-2011	Late 2013	Mid-2011	Late 2011	Mid-2011	Mid-2014
Disassembly of North Lawn Building	Mid-2013	Mid-2013	Mid-2013	Mid-2013	—	—	—	—	—	—

Note: The schedule reported in the Secretary-General's annual progress reports does not mention the work within the basements of the compound. The master schedule suggests this work will continue for the duration of the project and will be completed in mid-2014.

[a] See A/62/364 (initial schedule for accelerated strategy IV).

[b] See A/63/477.

[c] See A/64/346.

[d] See A/65/511.

[e] Supplementary information provided to the General Assembly by the Office of the Capital Master Plan in March 2011.

Annex III

Notable areas of uncertainty within the capital master plan schedule

Aspect of the capital master plan	*Areas of uncertainty*
Enhanced security upgrade at Franklin D. Roosevelt Drive	The upgrade will involve lane closures and structural work for which permits are required from state and city authorities. The Office of the Capital Master Plan is liaising with the authorities to develop the necessary working schedules. The Board, however, highlights this issue as a risk to the schedule because securing the permits is on the critical path for the entire project. According to the Office, one day's delay in this work translates into one day's delay in completing the project. For the work to progress according to schedule, it is essential that the permits allow work to be carried out at least four nights per week. Even when the permits are agreed, there is considerable uncertainty about the timescales for the planned work in this area. Some of the work can only progress at night and the nature of much of this work makes it difficult to estimate activity durations accurately.
Conference Building	The initial assessment of the impact on the schedule of the enhanced security upgrade meant delaying the completion date for the Conference Building to 2013. As this date was unacceptable, the construction manager was asked to revise the schedule to reduce the time allowed for individual tasks and programmed overlapping activities to produce an expected completion date of 21 December 2012. This is described as an "aggressive schedule" by the construction manager in his monthly report dated March 2011 and the company has set out a number of critical actions that the Administration must complete if this date is to be observed. The overall schedule for the capital master plan, however, does not yet include all aspects of the enhanced security upgrade work. The construction manager is updating the schedule, but planning at the time of the present report relies on "construction document" drawings that are 60 per cent complete. The completed drawings for the Conference Building will not be produced until at least 27 May 2011. The schedule for the Conference Building allows only six weeks from the date the construction manager submits the first amendment to the guaranteed maximum price contract until the Administration approves and signs the amendment. This process has typically been taking 113 days, or approximately 16 weeks (see section B.6). While it may be expected to take less time to approve an amendment to a guaranteed maximum price contract than to approve a new guaranteed maximum price contract, the Board believes that the provision of such a short timescale within the schedule remains a risk. Similarly, the schedule for the permanent broadcast facility within the Conference Building allows only six weeks for approval and sign off on the guaranteed maximum price contract. Without the permanent broadcast facility, the Conference Building will not be able to provide its core functions. Again, the Board believes the provision of this short, six-week period remains a risk to an activity on the project's critical path.

Aspect of the capital master plan	*Areas of uncertainty*
General Assembly Building	The General Assembly Building is scheduled to be completed in mid-2014, in time for the general debate in late 2014. The design is at the 100 per cent "construction document" phase, although an even more detailed set of construction documents will be developed during 2011, at which point the schedule for this building will become more certain.
Dag Hammarskjöld Library and South Annex Buildings	Renovation of the Library and South Annex Buildings is within the scope of the project. However, the Office of the Capital Master Plan has been unable to come up with a satisfactory design solution for these buildings in response to recent security assessments. Design work is on hold and it is unclear how progress will now be made on this issue. While the high-level summary project schedule shows indicative dates for completing this work, the procurement and construction activities for these buildings are not shown within the detailed overall schedule of the capital master plan.
Additional security measures on First Avenue	As part of the enhanced security upgrade, additional security measures are to be installed on First Avenue. This is additional scope to the capital master plan project. Installation of bollards, planters and anti-ram, devices and the construction of security screening buildings is planned to take place on land owned by authorities of New York City. This work will therefore require careful liaison with the authorities, as well as with utility companies.
North Lawn Building demolition	While the General Assembly reaffirmed in its resolution 65/269 that the North Lawn Building should be demolished, this demolition work is not included in the project's monthly schedule and the timescales for this work are not included in the Secretary-General's annual progress report. The Board understands, however, that this work would likely take place in late 2014, after the completion of the General Assembly Building.
Basement infrastructure	The work on the basements of the United Nations campus has proven difficult and has resulted in a significant amount of change. The ongoing rate of changes creates significant uncertainty in the schedule. There is a specific uncertainty about the schedule for the loading dock. The design intentions are not yet set out and potential changes to traffic flows on Forty-eighth Street would require approval from the authorities of New York City.
Secretariat Building	The schedule for the Secretariat Building was originally based on a top-down construction and fit-out. The Office of the Capital Master Plan has now changed its plans and has asked the construction manager to first complete floors 17 to 27, and to work to a shorter timescale for completing the first 10 floors. The guaranteed maximum price contract includes a date of 3 September 2012 for completing the entire building, but the Office and the construction manager had informally agreed to complete the first 10 floors by 1 July 2012. The Office now wants this date brought forward to 1 June 2012. This is a challenging schedule, with minimal room for error or delay. If any problems do occur, there could be a need to commit additional funding to accelerate elements of the project; but even this would be constrained by the capacity of the single external hoist in the Secretariat Building.

Annex IV

Details of the costs of the enhanced security upgrade

(Millions of United States dollars)

Area affected by the upgrade	*Predicted cost of the upgrade*	*Work to be carried out in the upgrade*
Conference Building	89.53	Significant structural strengthening on Franklin D. Roosevelt Drive and within the Conference Building and associated basements
First Avenue and visitor and staff security screening facilities	31.96	Installation of protective bollards and, potentially, gates and other structures on the sidewalk. The construction of two security screening buildings that will be positioned as far as possible from the campus buildings, potentially on city-owned land
Work originally budgeted for but no longer required	(21.93)	The budget before the enhanced security upgrade has included provisions for some structural work (design and management costs) that is no longer required
Total	**99.56**[a]	

Source: Capital master plan high-level cost summary for enhanced security upgrade monthly tracking report, April 2011.

[a] Consists of construction costs ($82,185,000), professional fees and management costs ($10,713,000), and contingency ($6,659,000) (source: supplementary information provided to the General Assembly by the Office of the Capital Master Plan in March 2011).

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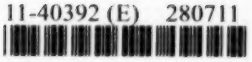

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